REMARKS

The Office Action dated July 24, 2008 has been received and carefully studied.

The Examiner newly rejects claims 1, 3-5, 7-10, 13 and 15 under 35 U.S.C. §103(a) as being unpatentable over White et al., U.S. Patent No. 6,539,968, in view of Vavra et al., U.S. Patent No. 5,303,731, and Inayama et al., U.S. Patent No. 6,584,999. The Examiner states that White et al. disclose a fluid flow control apparatus comprising all of the elements of claim 1 except for the solenoid type proportional control device comprising a pneumatic valve. The Examiner cites Inayama et al. for its teaching of the use of a pneumatic proportional control valve 76, 78 for controlling a proportional fluid control valve for the purpose of providing a self-contained flow control device. The Examiner cites Vavra et al. for its disclosure of a frictional flow element comprising a helical coil to produce a pressure drop in the fluid traveling through the flow element. The Examiner concludes that it would have been obvious to have modified the apparatus of White to include the helical coil to provide a compact means of producing a pressure drop, and to have used the pneumatic proportional control valve of Inayama et al. in place of the solenoid type proportional control device 43 of White et al. to provide a self-contained flow control device.

The rejection is respectfully traversed.

Applicants respectfully submit that the skilled artisan would not modify the White et al. fluid flow control apparatus with the

pneumatic proportional control valve of Inayama et al. for the following reasons.

The valve 40 of White et al. is electrically actuated (see column 4, lines 61-64). An actuator 43, such as a solenoid, is electrically actuated to operate closure member 41, which throttles flow of fluid from internal passage 42 to internal passage 44.

Inayama et al. disclose a fluid pressure controller for supplying fluid pressurized at a regulated pressure to a fluid pressure apparatus such as a cylinder. The "pneumatic proportional control valve (76, 78)" relied upon by the Examiner is an air supply solenoid valve 76 and a spaced apart air discharge sclenoid valve 78. As can be seen in Figure 2, pressurized fluid is supplied from a source to the air supply solenoid valve 76 via fluid supply port 24 in fluid communication with passage 80. Importantly, the same fluid from the source is also fed the fluid supply port 24 via a fluid communication passage 30 to the regulator port 28, which ultimately results in the discharge of the pressurized fluid via the discharge port 38 when the valves are actuated accordingly. That is, fluid from the fluid supply source that is fed to the air supply solenoid valves 76, 78 is also the same source of pressurized fluid being regulated and fed to the point of use.

The air supply solenoid valves are operative to control the pilot pressure of a pilot chamber 58, which dictates the position of valve plug 34a, allowing pressurized fluid to be discharged from discharge port 38.

Applicants fail to see how the skilled artisan would be motivated to substitute the air supply solenoids 76, 78 of Inayama et al. for the electrically actuated solenoid of White et al. The White et al. fluid mass flow controller controls the flow of toxic or reactive fluid (e.g., tungsten hexafluoride, chlorine, sulfur hexafluoride) in gaseous form for use in semiconductor fabrication. Certainly the skilled artisan would not choose to use that same toxic fluid as the hydraulic fluid supply to an air supply valve as taught by Inayama et al. in order to operate closure member 41.

The Examiner states that it would have been obvious to one of ordinary skill in the art to have utilized the pneumatic proportional control valve taught by Inayama et al. in place of the solenoid type proportional control valve of White et al. "for the purpose of providing a self-contained flow control device." However, the White et al. controller is already a self-contained flow control device, as can be seen in Figure 1 thereof.

Furthermore, to be operable, the modification of White et al. with the "pneumatic proportional control valve (76, 78) of Inayama et al., if even possible would require substantial additional structure. That is, the valves 76, 78 of Inayama et al. function to pressurize the pilot chamber 58, which deflects diaphragm 54, which in turn ultimately displaces the valve plug 34a, regulating the pressurized fluid from the supply port 24 to the regulator port 28. No such pilot chamber, diaphragm or valve plug is present in White et al. No motivation exists for complicating the White et al. electrically operated solenoid valve 43 with the

intricate system of Inayama et al. to actuate closure member 41.

The Examiner also rejects claim 6 under 35 U.S.C. §103(a) as being unpatentable over White et al. in view of Vavra et al. and Inayama et al., and further in view of McLoughlin et al., U.S. Patent No. 6,348,098, and claim 15 as being unpatentable over White et al. in view of Vavra et al. and Inayama et al., and further in view Balazy, U.S. Patent No. 6,152,162. McLoughlin et al. is cited for its disclosure of a suckback valve in pneumatic communication with a pneumatic proportional control valve. Balazy et al. is cited for its disclosure of means for regulating the fluid pressure of the fluid entering the first fluid inlet.

Claims 6 and 15 are believed to be allowable by virtue of their dependence, for the reasons discussed above.

The Examiner's allowance of claims 11, 12, 14 and 53 is noted with appreciation.

Reconsideration and allowance of all pending claims are respectfully requested in view of the foregoing.

Respectfully submitted,

Kevin S. Lemack
Reg. No. 32,579
176 E. Main Street - Suite 5
Westboro, Massachusetts 01581
TEL: (508) 898-1818